

SONY



3001477

SONY BDA

EVV9000P

3-751-770-11 (1)

Video Cassette Recorder

EVV-9000P

Operating Instructions page 2

Before operating the unit, please read this manual thoroughly and retain it for future reference.

Mode d'emploi page 36

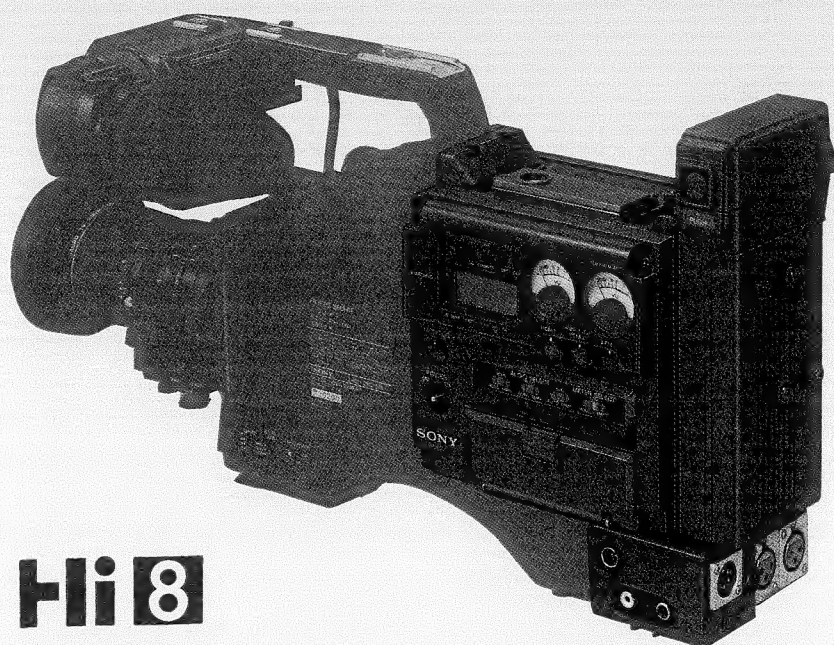
Avant la mise en service de cet appareil, prière de lire attentivement ce mode d'emploi que l'on conservera pour toute référence ultérieure.

Bedienungsanleitung Seite 70

Lesen Sie vor der Inbetriebnahme diese Anleitung sorgfältig durch und bewahren Sie sie zum späteren Nachschlagen gut auf.

Istruzioni per l'uso pagina 104

Prima di usare l'apparecchio, leggere con attenzione questo manuale e conservarlo per riferimenti futuri.



Hi8

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

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Overview

The EVV-9000P is a Hi8 video cassette recorder for a camcorder dockable to the DXC-325P (3-chip CCD color video camera).

Features

Hi8 format for high quality picture

The Hi8 video system gives much better picture quality than standard 8 mm video system. For Hi8 recording, Hi8 ME (Metal Evaporated) videocassettes must be used. The EVV-9000P is provided with both Hi8 and standard record/playback mode. The cassette type is automatically detected. And the recorded mode is also automatically detected when playback.

Y/C separated video input

Conventionally, video equipment exchanges the composite video signal containing the luminance (Y) signal and the chrominance (C) signal mixed. The composite video signal is liable to produce interference resulting in picture quality loss. The EVV-9000P, on the contrary, uses the Y/C separated video input, which minimizes flickers and color blur. Sharpness is enhanced to such an extent that hair and fine stripes are clearly visible.

One AFM and two PCM audio channels

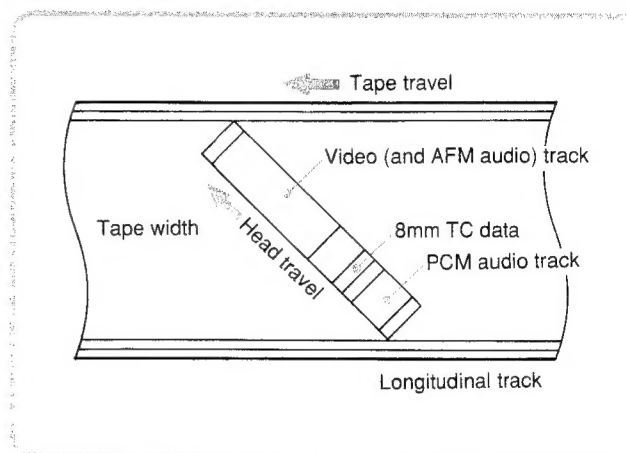
The EVV-9000P provides high quality audio with its monaural AFM and stereo PCM recording system.

Built-in 8 mm time code generator

The 8 mm time code is recorded onto a tape for precise editing reference.

8 mm tape format

The video, audio and time code signals are recorded on the 8 mm video tape as follows.



8mm time code

The 8 mm time code has been developed to record the absolute frame address onto the tape for precise editing reference. The 8 mm time code is digitally recorded by units of hour, minute, second and frame by the video heads.

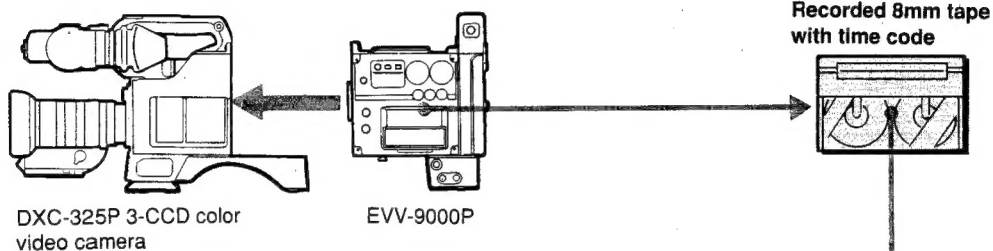
Note

The 8 mm time code is used only for 8 mm format. It is not compatible with time codes recorded in other time code format.

Application

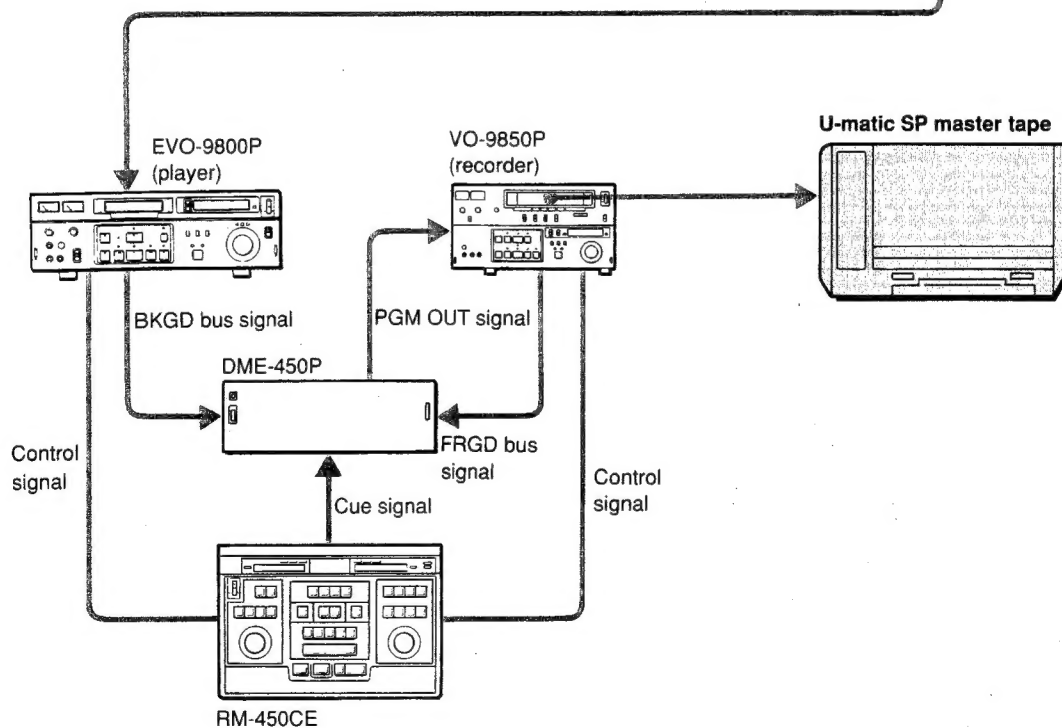
Example: To edit the recorded 8mm tape with time code to make up the master U-matic SP tape:

Recording



Two-VCR editing

By using the DME-450P with the RM-450CE, electronic editing with special effects can be carried out using two VCRs; a player and a recorder.



Overview

Hi8 (High Eight) Video system

The 8mm video system uses metal tape, so it can record a large amount of information and give enhanced picture quality. The Hi8 video system is based on the 8mm video system but has improved the picture quality.

High Quality Picture

In the Hi8 format, the luminance carrier frequency is shifted up from 5.0 MHz of the standard 8mm format to 7.0 MHz at center carrier level to realize more than 400 TV lines of horizontal resolution. The FM deviation expanded from 1.2 MHz to 2.0 MHz greatly improves S/N ratio. Thus, the EVV-9000P offers such effects as recording more detailed visual information and less noise at the edges of objects in the picture.

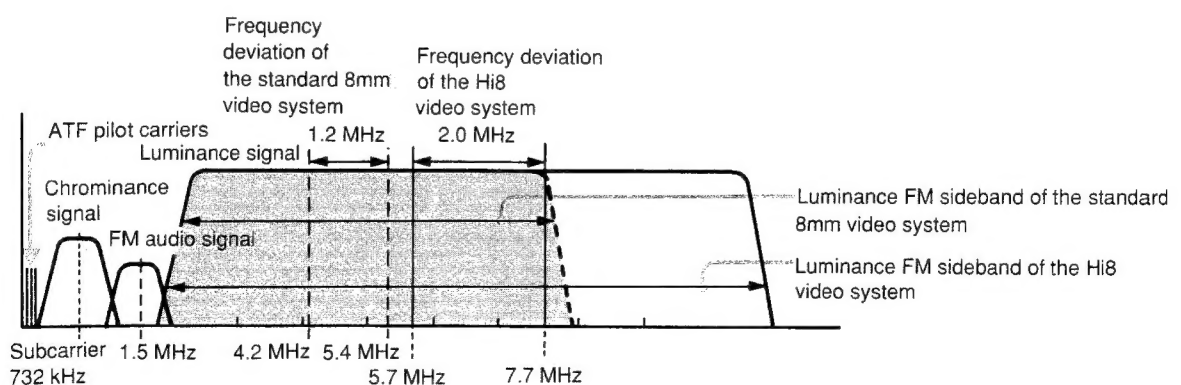
In addition, the new TSS (Tilted Sendust Sputtered) head achieves 2dB higher output than the conventional head, and a new pre-emphasis system together with a high white clip level (220%) can offer more precise reproduction.

Use of High Grade Tape Corresponding to the Hi8 Video System

Metal evaporated tape is ideal for video systems because it has large magnetic energy that enables high-density recording. The Hi8 video cassette recorder uses such high-grade tape covering a wide frequency range, to achieve a high-quality video signal for recording/playback.

Difference between 8mm and Hi8 Format

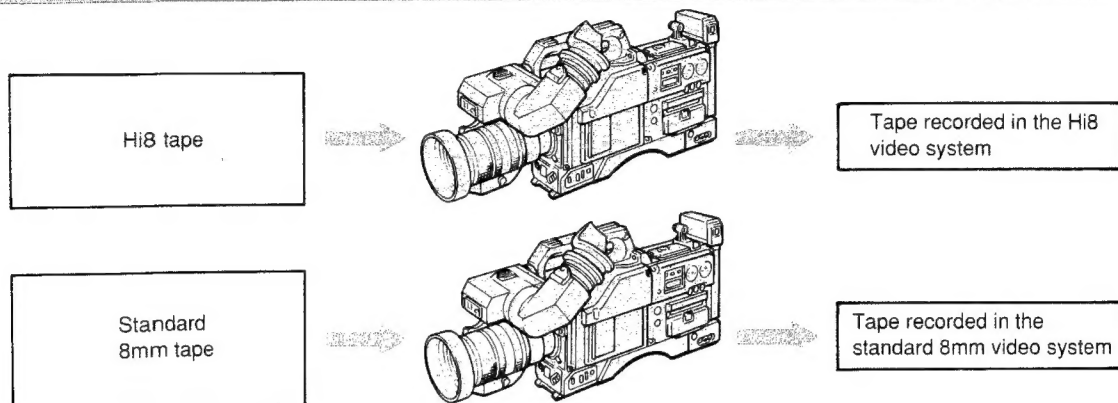
The chroma subcarrier frequency which carries information on colors is kept unchanged at 732 kHz. The frequency of the Y carrier is shifted up by 1.5 MHz, and the deviation is widened to 2.0 MHz.



Recording and Playback Systems

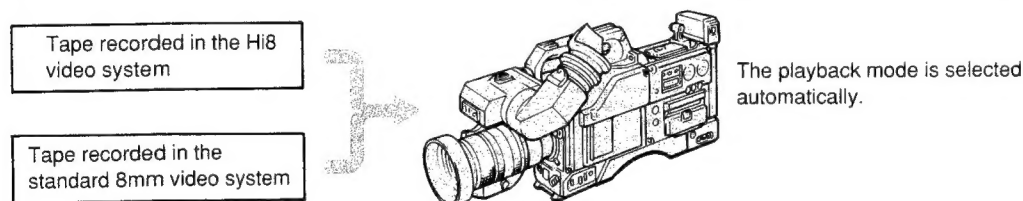
Recording format is automatically selected according to the tape used.

Recording with this unit



- A tape recorded in the Hi8 video system cannot be played back with a conventional 8mm video camera recorder.
- A tape for the Hi8 video system cannot be recorded and played back in the Hi8 video system with a conventional 8mm video camera recorder.

Playback with this unit



- Recording and playing back in the Hi8 video system is not possible when using a standard 8mm tape.
- The recording tape speeds in the Hi8 video system are compatible with the standard 8mm format. Recording/playback time is 1.5 hours using a P5-90MP tape or the equivalent.

Precautions

Safety

- Operate the unit only on 12 V DC. Use the accessories recommended in this manual for power sources.
- Do not disassemble the unit, as precision parts inside the unit may be damaged.
- Allow adequate air circulation to prevent internal heat built-up.
- Should any solid object or liquid fall into the cabinet, have the unit checked by qualified personnel before operating it again.

Operation

- Do not operate the unit outside the -5°C to 45°C (23°F to 113°F) temperature range.
- Avoid using and storing the unit in the following locations.
 - Locations susceptible to vibration.
 - Locations exposed to strong magnetic fields.
 - Locations near TV or radio transmitters where strong radio waves are generated.
- Remove and store video cassettes after recording or playback.
- Store cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.

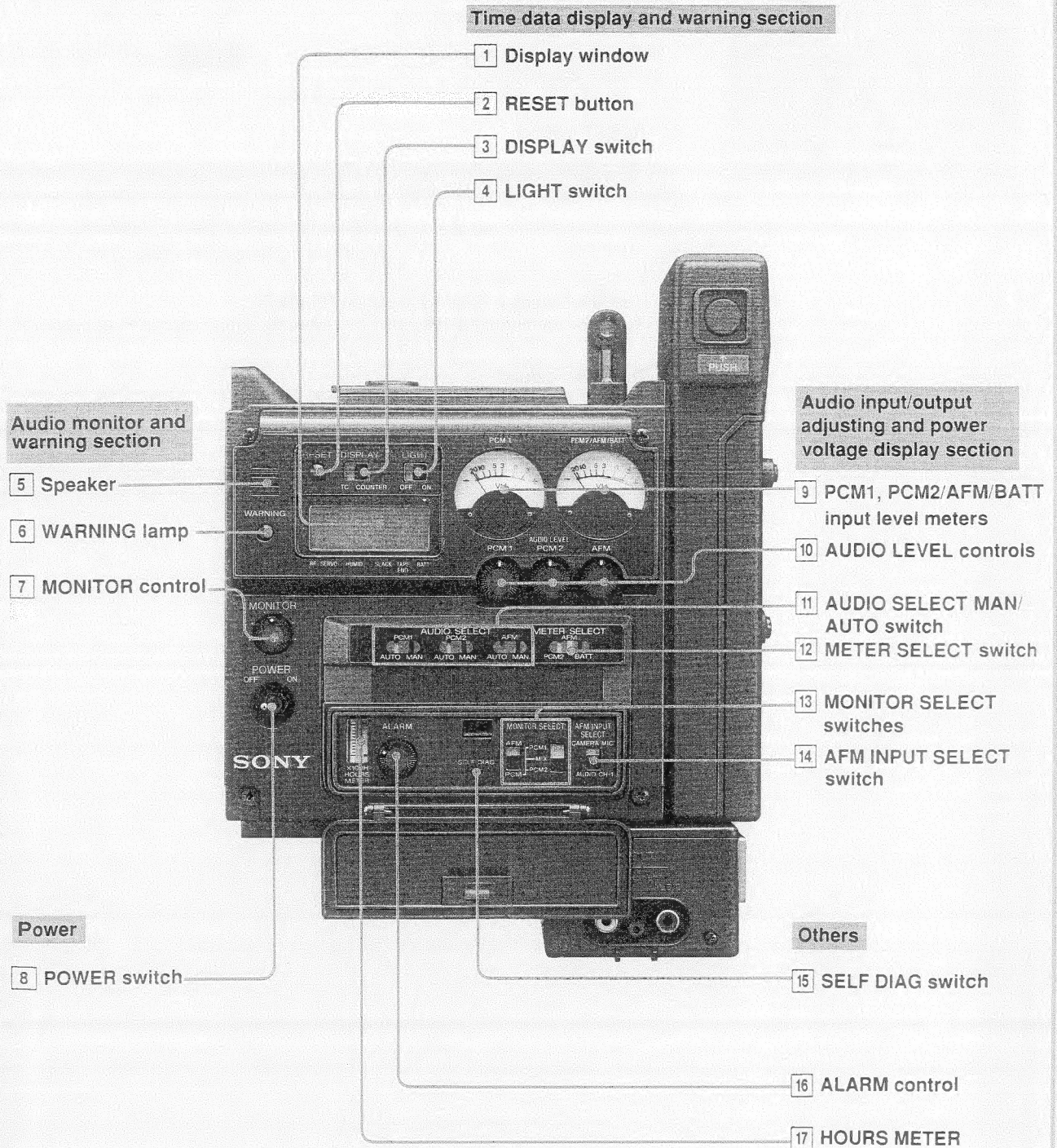
Cleaning

Clean the cabinet, panel and controls with a dry soft cloth or soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine, which might damage the finish.

Repacking

Do not discard the carton. It provides maximum protection whenever the unit is transported. Do not transport or ship the unit only in a carrying case. Repack it as it was originally packed.


Location and Function of Parts and Controls



Location and Function of Parts and Controls

Time data display and warning section

1 Display window

Setting or condition	Displayed content
DISPLAY switch 3 : TC	Time code (See page 4.)
DISPLAY switch 3 : COUNTER	Tape running time
When an error occurs, see to "Warning System" (page 30)	 (warning cursor)

2 RESET button

Setting of DISPLAY 3	Indication to be reset
TC	Time code on the display window 1 ¹⁾
COUNTER	Tape running time on the display window 1 ²⁾

1) See "Recording the 8mm time code" (page 26).

2) The tape running time indication can be reset during recording or playback.

3 DISPLAY switch

Selects indication on the display window **1**.

4 LIGHT switch

Set the switch to ON to illuminate the display window **1** and PCM1, PCM2/AFM/ BATT input level meters **9**. Set the switch to OFF to turn off the illumination.

Audio monitor and warning section

5 Speaker

VTR mode	Sound through the speaker ¹⁾
During recording	Sound in the E-E mode ²⁾ Warning beep ³⁾
During playback	Played-back sound
Other modes	Sound in E-E mode ²⁾ Warning beep ³⁾

- 1) When you connect an earphone to EARPHONE jack [28], the sound through the speaker is automatically cut.
- 2) E-E (Electric-to-Electric) mode
The sound of an input audio signal which passed through the amplifier in the VTR without passing magnetic converting circuits such as a head or tape is heard through the speaker. This E-E mode permits the input signal to be checked. When the safety tab on the cassette is slid out to prevent accidental erasure, or the POWER switch on the video camera is set to OFF, no sound will come from the speaker.
- 3) See "Warning System", page 30.

6 WARNING lamp

Lights up or blinks when something wrong or undesirable has happened with your VTR. For details, see "Warning System", page 30.

7 MONITOR control

Adjusts the audio playback level of the sound through the speaker [5] or EARPHONE jack [28]. When turning it fully counterclockwise, the monitor sound cannot be heard.

8 POWER switch

Turns the power on and off. When the power is turned on, time code or tape running time is displayed on the display window [1].

Power

Location and Function of Parts and Controls

Audio input/ output adjusting and power voltage display section

9 PCM1, PCM2/AFM/BATT input level meters

Level meter	Setting of METER SELECT ¹²	Contents of display
PCM1		PCM1 recording level
PCM2/AFM/BATT	PCM 2	PCM2 recording level
	AFM	AFM recording level
	BATT	Power voltage level

10 AUDIO LEVEL controls

Used to manually adjust the audio recording level of the following channels.

PCM1	PCM1 channel
PCM2	PCM2 channel
AFM	AFM channel

11 AUDIO SELECT MAN/AUTO selector

Selects automatic or manual adjustment of the audio recording level.

AUTO	For automatic adjustment (The automatic gain control circuit will be activated to regulate the audio level to assure optimum recording.)
MAN	For manual adjustment by using the AUDIO LEVEL controls ¹⁰ (Any excessive input, if any, is blocked by a limiter to minimize distortion at the peaks.)

12 METER SELECT switch

Selects display on the PCM1, PCM2/AFM/BATT input level meter ⁹.

See the description of the PCM1, PCM2/AFM/BATT input level meters ⁹.

13 MONITOR SELECT switches

The right and left switches select the audio signal output from the AUDIO OUT connector [32] and the speaker [5] or the EARPHONE jack [29].

Left switch	Right switch	Audio signal output
AFM		Sound of the AFM channel
PCM	PCM1	Sound of the PCM1 channel
	MIX	Mixed sound of the PCM1 and PCM2 channels
	PCM2	Sound of the PCM2 channel

14 AFM INPUT SELECT switch

Selects the audio signal to be recorded on the AFM and PCM1 channels.

CAMERA MIC	AFM channel: the signal from the microphone on the video camera PCM1 channel: the signal input to the AUDIO CH-1 connector [25].
AUDIO CH-1	AFM channel: the signal input to the AUDIO CH-1 connector [25]. PCM1 channel: the signal from the microphone on the video camera.

Others

15 SELF DIAG switch

Provided for maintenance service. Do not operate this switch.

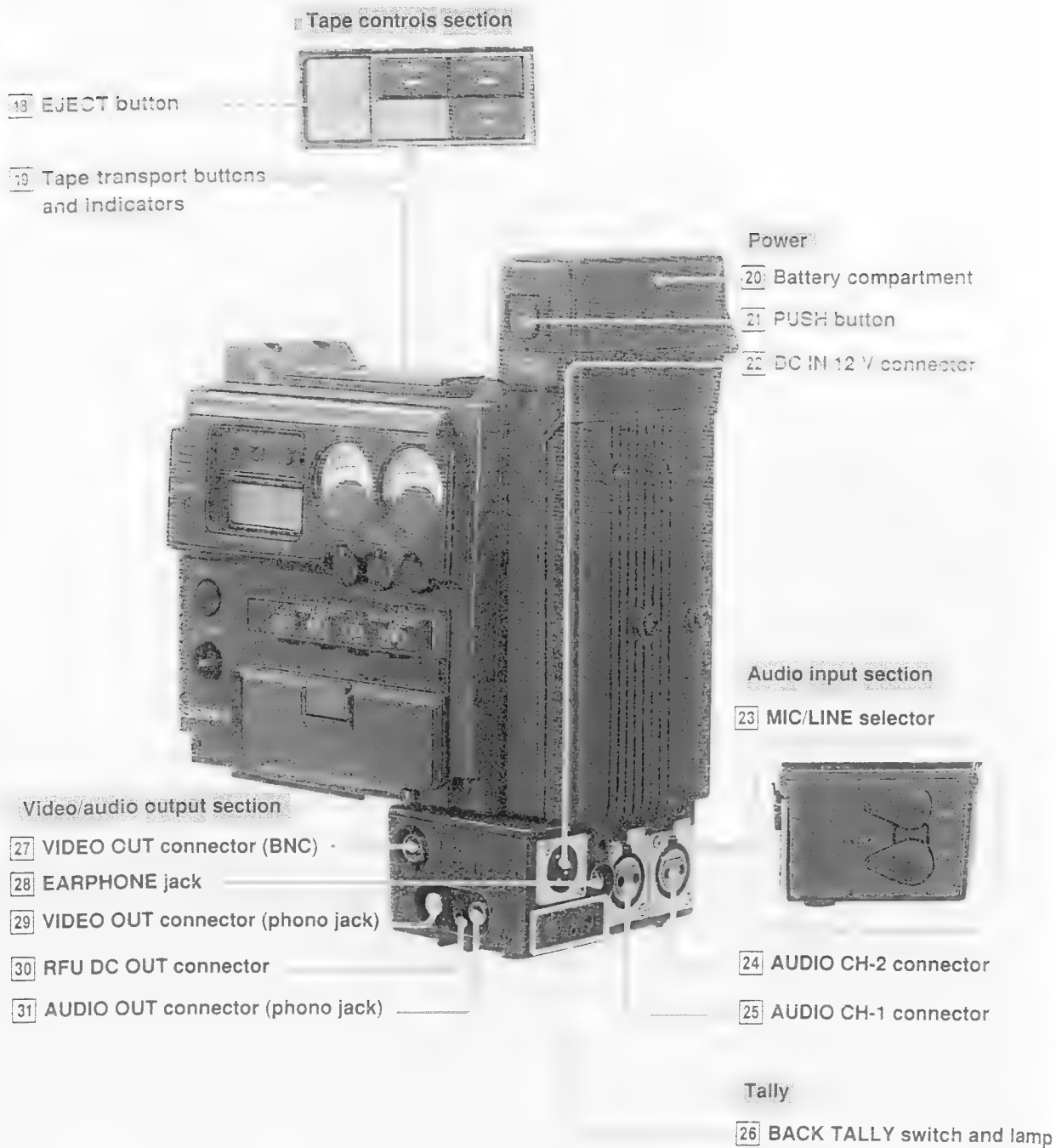
16 ALARM control

Adjusts the level of the warning beep. When turned fully counterclockwise, the warning beep cannot be heard.



17 HOURS METER

Shows the hours when the VTR has been in service. (One division represents 100 hours.) When the meter indicates maximum 1000 hours, contact you authorized Sony dealer to replace the meter and video heads with new ones.



Tape controls section

18 EJECT button ¹⁾

Press down to open the cassette holder. The button can be pushed with the lid either closed or open.

19 Tape transport buttons and indicators ¹⁾

- ◀◀ REW (rewind) button and indicator
- STOP button
- ▶▶ F FWD (fast forward) button and indicator
- ▶ PLAY button and indicator

1) These buttons are deactivated while the VTR is recording. See "Use of the transport buttons", on page 29.

Power

20 Battery compartment

Insert a charged NP-1A/1B battery pack (not supplied).

21 PUSH button

Press down to open the lid of the battery compartment.

22 DC IN 12V connector (XLR, 4pin)

Connect a CMA-8CE camera adaptor (not supplied) to operate the VTR with an AC power supply.

Audio input section

23 MIC/LINE selector

MIC	Set to this position when connecting external microphones to AUDIO CH-1 ²⁵ or AUDIO CH-2 ²⁴ .
LINE	Set to this position when connecting the audio system to AUDIO CH-1 ²⁵ or AUDIO CH-2 ²⁴ .

24 AUDIO CH-2 connector (XLR, 3-pin)

25 AUDIO CH-1 connector (XLR, 3-pin)

Location and Function of Parts and Controls

Tally

[26] BACK TALLY switch and indicator

Set the switch to ON to show whether the VTR is recording or not recording to people behind the video camera.

Switch	Indicator
ON	Activated when recording
OFF	Not activated

Video/audio output section

[27] VIDEO OUT connector (BNC) ¹⁾

[28] EARPHONE jack (minijack) ¹⁾

Connect an earphone (not supplied).

You hear the same sound from the earphone as ones from the speaker **[5]**.

[29] VIDEO OUT connector (phono jack) ¹⁾

[30] RFU DC OUT connector

Connect the RFU-89EA/ASA RFU modulator (not supplied) to this connector and VIDEO OUT connector **[29]** and AUDIO OUT connector **[31]** for connecting to the VHF antenna terminal of a TV receiver.

[31] AUDIO OUT connector (phono jack) ¹⁾

1) When the safety tab on the cassette is slid out to prevent accidental erasure or the POWER switch on the video camera is set to OFF, the input video and audio signals which passed through the amplifier in the VTR without passing magnetic converting circuits such as a head or tape (in the E-E mode) do not appear at these connectors.

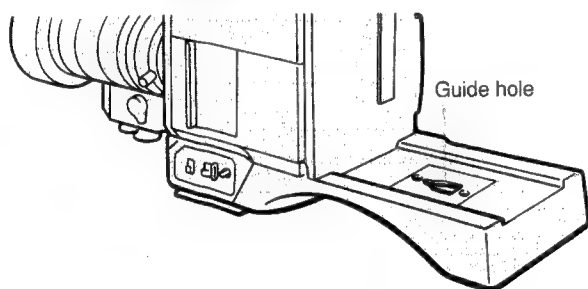
Assembly

Before assembling, make sure that the power of the VTR and video camera is turned off.
The DXC-325P color video camera comes into two types: with a guide hole and without a guide hole.

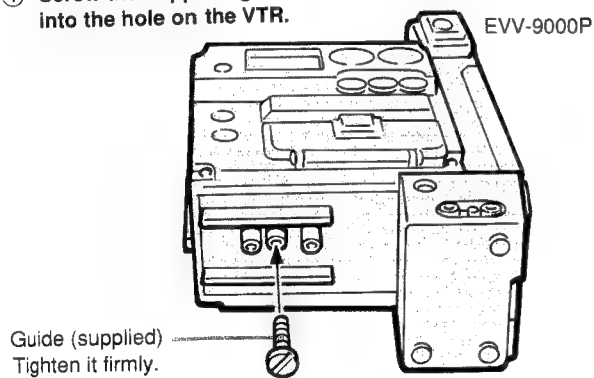
Assembling the VTR and the DXC-325P

1

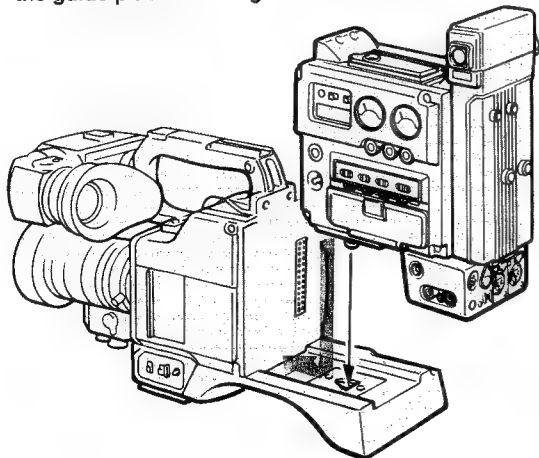
When the DXC-325P has the guide hole



- ① Screw the supplied guide into the hole on the VTR.



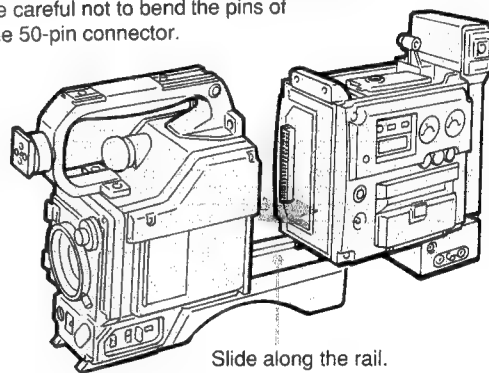
- ② Put the VTR on the video camera with the guide placed in the guide hole.



When the DXC-325P has no guide hole

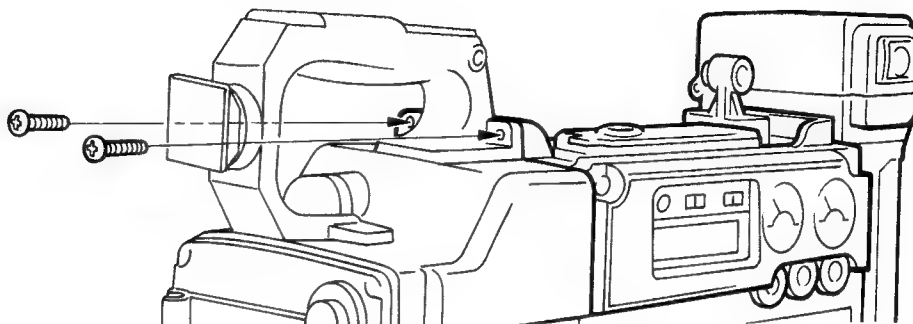
To connect the VTR to the camera, move the VTR to the back of the video camera along the rail.

Be careful not to bend the pins of the 50-pin connector.

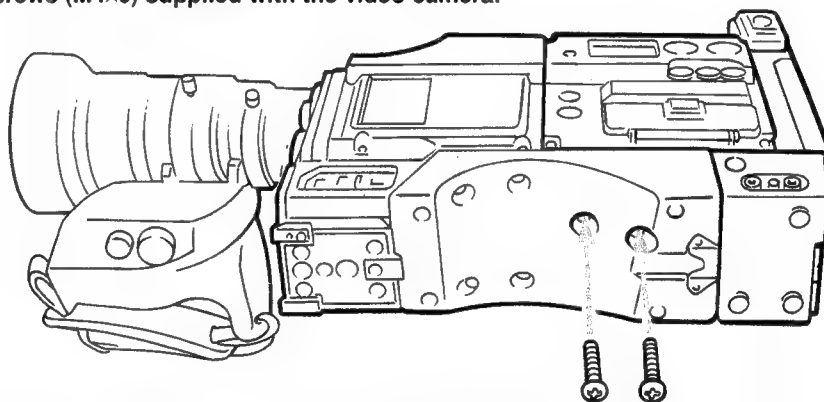


Assembly

- 2** Tighten the two screws (M4×12) supplied with the video camera.



- 3** Tighten two screws (M4×6) supplied with the video camera.



Disassembly

Disassemble the VTR and the video camera in the reverse order of "Assembling the VTR and the camera".

Note

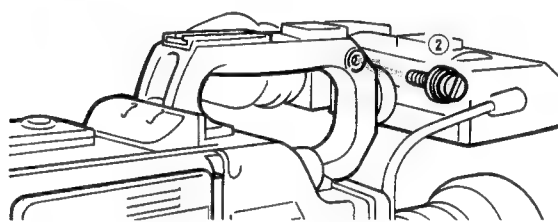
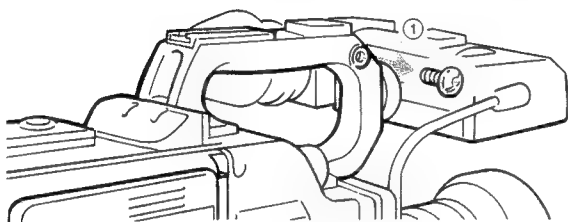
When attaching a microphone to the DXC-325P color video camera, use a CAC-12 microphone holder (not supplied).
Do not use CAC-1/11A microphone holders.

Attaching the shoulder strap

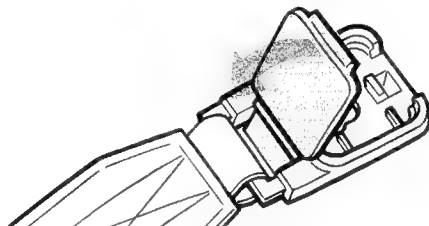
- 1** Remove the blind screw (①).
Insert the metal mount supplied with the VTR into the hole and
tighten the mount (②).

Caution

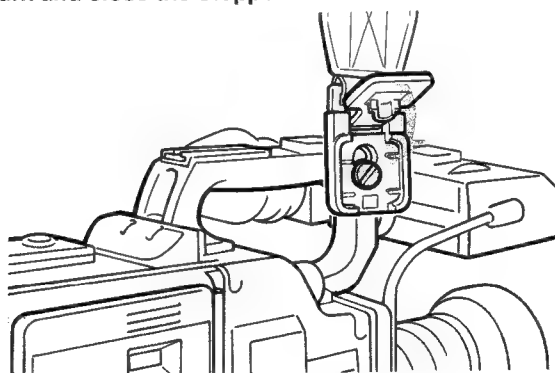
If the mount comes loose, the camera will fall.
Make sure the mount is secure.



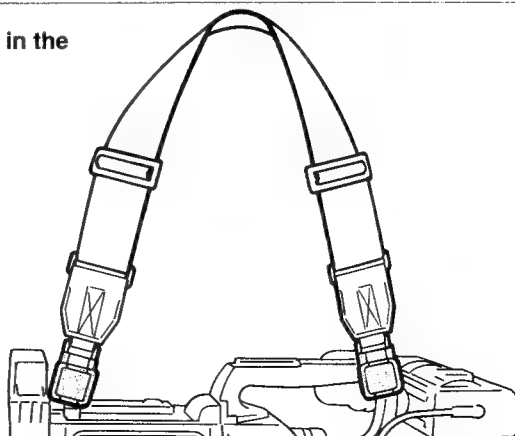
- 2** Open the stopper.



- 3** Hook the stopper on the metal mount and close the stopper.



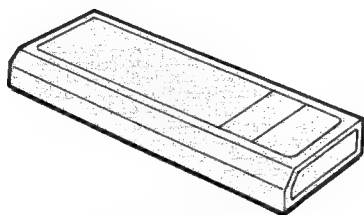
- 4** Attach the other side of the shoulder strap in the same way.



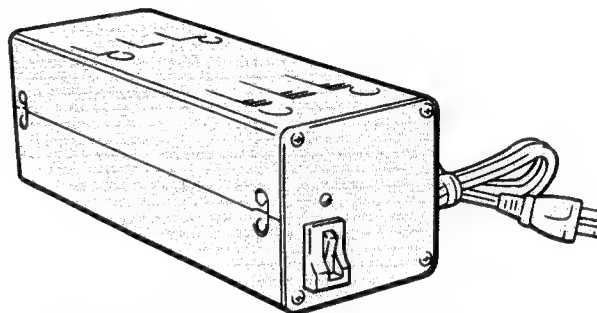
Power Sources

Power Sources Available with This Unit

The following battery packs or camera adaptor can be used with this unit.



NP-1A/1B battery pack



CMA-8CE Camera adaptor for AC operation

Power is supplied to the video camera via the 50-pin connector.

Caution

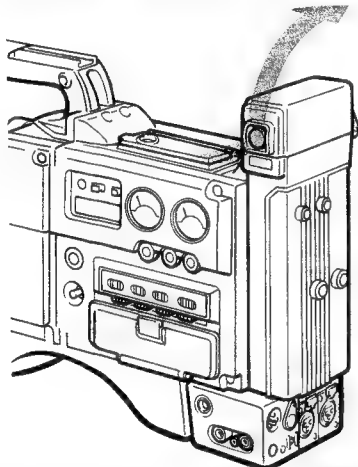
When the power source is disconnected during recording or playback, immediately reconnect it. Otherwise, the tape may be damaged.

NP-1A/1B Battery Pack

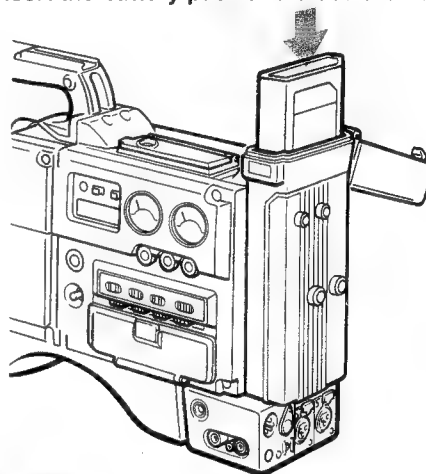
The NP-1A/1B battery pack (not supplied) provides approximately 60 minutes of continuous operation with the video camera attached, if the battery pack is fully charged. The operating time will be shorter in a cold place.

To insert the battery pack

- 1 Press the PUSH button to open the lid.



- 2 Insert the battery pack and close the lid.



To remove the battery pack

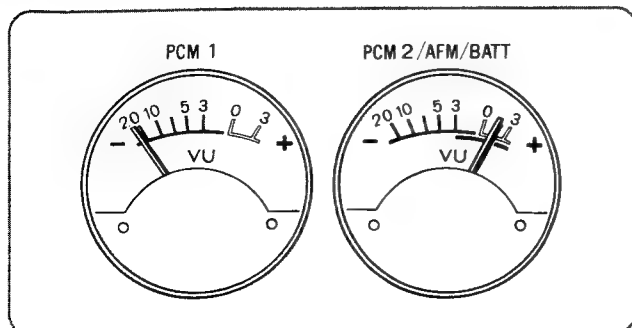
Press the PUSH button to open the battery compartment, and take out the battery pack.

To charge the battery pack

Before using the battery pack, be sure to charge it using the optional BC-1WA battery charger. For details, refer to the instruction manual of the battery charger.

To check the battery voltage

Set the POWER switch to ON and the METER SELECT switch to BATT. If the battery voltage is sufficient, the meter pointer moves in the green zone. It is recommended to check the battery voltage in the recording pause mode.



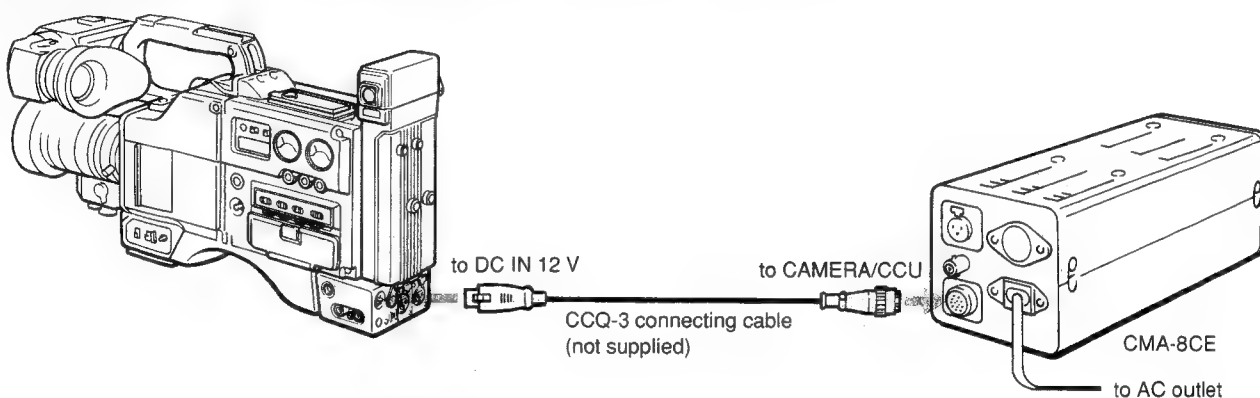
Caution

Be careful not to let any metal object touch on the metal parts of the battery pack.

Power Sources

AC Power

Use the CMA-8CE (not supplied) camera adaptor.



By connecting the CMA-8CE camera adaptor to the DC IN 12V connector, the power source is automatically changed from the battery pack to the CMA-8CE camera adaptor.

Caution

When changing the power source from the internal battery pack to the external AC power, set to stop mode and set the POWER switch on the VTR to OFF.

Cassette Care

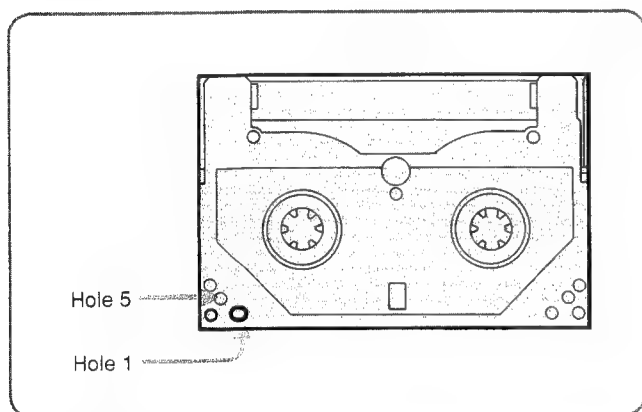
Cassette in Use

Cassette type and automatic change of record/playback mode

For Hi8 recording, use Hi8 ME tapes. When using the standard 8mm video cassette tape, the standard recording and playback are performed. The cassette type and recording mode are automatically detected.

Cassette type detection

The VTR reads the holes in the cassette to determine what type of cassette it is.



Tape	Hole 1	Hole 5
MP (Standard 8mm cassette tape)	Close	Close
HME (Hi8 cassette tape)	Open	Close

Cassette type and recording/playback time

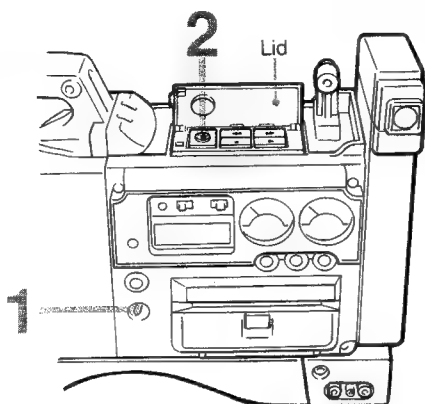
Cassette tape	Recording/playback time
P5-15MP	15 min.
E5-30HME, P5-30MP	30 min.
E5-60HME, P5-60MP	60 min.
E5-90HME, P5-90MP	90 min.

Notes

- Store the cassettes in their cases and keep them upright. This will keep dust out and prevent the tape unraveling.
- Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the type and its thickness and whether the safety tab is out or in.

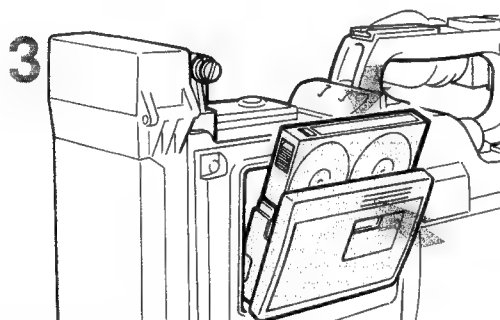
Cassette Care

Cassette Insertion



1 Set the POWER switch to ON.

2 Press down the EJECT button to open the cassette holder.
The button can be pushed with the lid either closed or open.



3 Insert the cassette and close the cassette holder by pushing where "PUSH" is indicated.

To eject the cassette
Press down the EJECT button.

To prevent accidental erasure

When you rerecord on an already recorded tape, the original record will be erased. If you don't want to lose the material recorded on a tape, slide out the safety tab on the cassette so that it covers the opening. (A red mark will appear.)



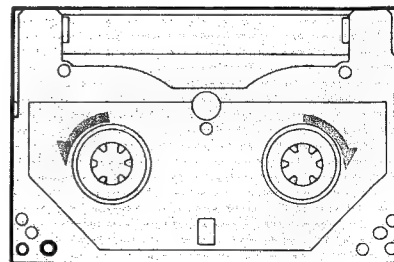
To keep the original record, slide out the tab so that the red mark appears. To record on the cassette, slide in the tab to uncover the opening.

Note on cassette Insertion

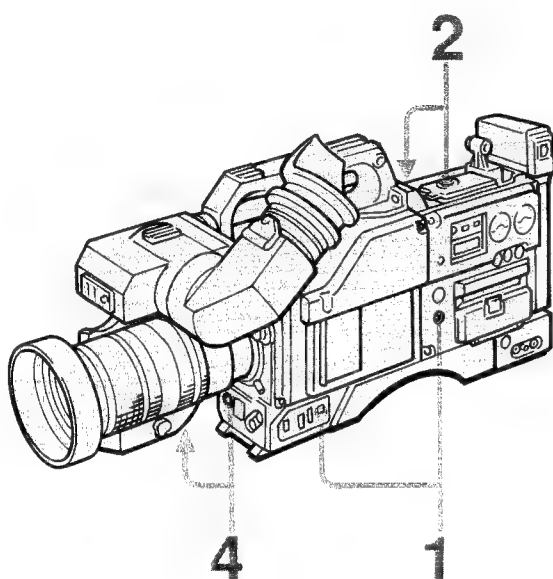
When using a cassette tape for the first time, wind the tape in the direction of the arrow to take up slack as shown in the illustration.

If the tape is slack, it may happen that scratches are caused on the tape.

(Note: Make sure not to wind the tape in the opposite direction of the arrow mark.)



Recording



1 Set the **POWER** switches on the VTR and the video camera to on.

2 Insert a cassette.

3 Point the video camera at the subject, and adjust the video camera to make it ready for operation. (Refer to the instruction manual of the video camera.)

4 Press the **VTR** button on the video camera or the lens.
Recording will start.
(But, it takes a few seconds for the servo-mechanisms to lock in.)

To enter the recording pause mode, press the **VTR** button on the video camera or on the lens during recording.

To stop recording, set the VTR to the recording pause mode, then press the **STOP** button on the VTR.

To check the last scene of the previous recording – Rec review

Set the VTR in the recording pause mode, and press the **REC REVIEW** button on the video camera. The tape is rewound for 2 seconds and the VTR automatically starts to playback the last scene and stops at the previous position. Check the recorded picture on the viewfinder and the recorded sound through the speaker or earphone. Recording pause mode is resumed.

Note on recording pause mode

If the unit is left in the recording pause mode for about 5 minutes, the unit automatically enters the stop mode in order to protect the tape.

Note

When the safety tab on the cassette is slid out to prevent accidental erasure, or the **POWER** switch on the video camera is set to **OFF**, you cannot make a recording.

To record from the beginning of the tape

Run the tape for about 15 seconds at the beginning of a cassette before recording. It prevents you from missing the starting point when starting playback or leaving the previously recorded portion when recording on the recorded tape.

To monitor the sound

Monitor the sound through the speaker or the earphone connected to the **EARPHONE** jack. Select the monitor sound with the **MONITOR SELECT** switch.

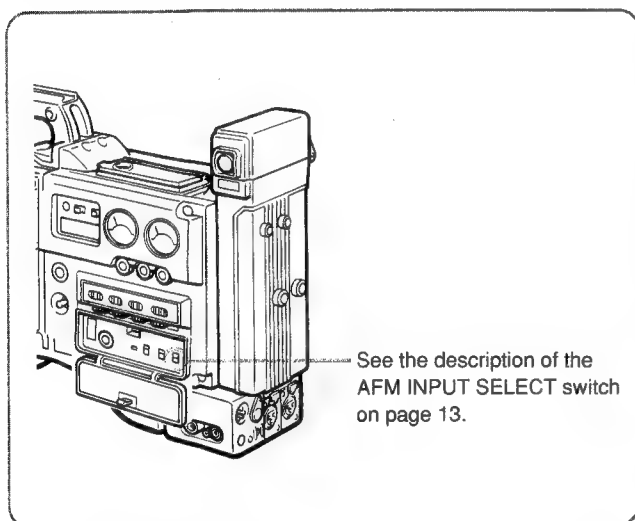
Recording

To select the sound to be recorded

The sound is recorded on the monaural AFM channel and two PCM channels (PCM1 and PCM2).

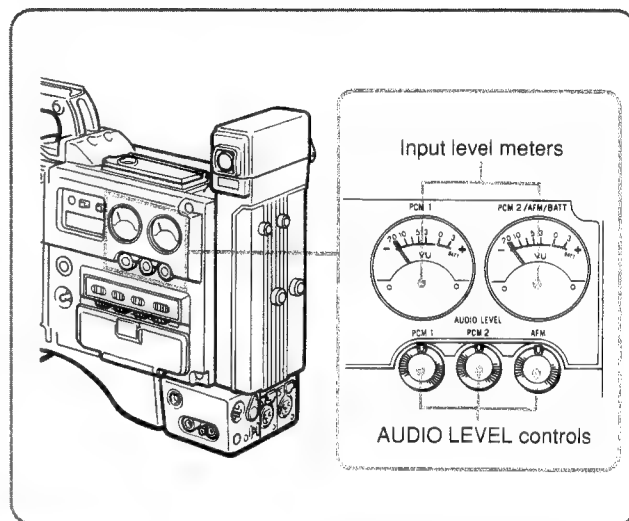
AFM channel	Input source is switchable between the built-in microphone of the video camera and input source from AUDIO CH-1 connector.
PCM1 channel	
PCM2 channel	Input source from AUDIO CH-2 connector.

Select channels by using the AFM INPUT SELECT switch.



Manual recording level adjustment

To manually control sound recording levels, set the AUDIO SELECT switch to MAN. Then, using the AUDIO LEVEL controls, adjust the levels so that the needles do not enter the red zones even at the peaks.



Recording the 8mm time code

The 8mm time code is automatically recorded as shown in the following table regardless of the DISPLAY switch setting.

Tape	Time code
Blank tape	Time code recording starts from "00:00:00:00"
Recorded tape	Time code follows the previously recorded time code value.

To reset the time code when recording

- 1 Insert the recorded tape cassette in the cassette holder.
- 2 Set the DISPLAY switch to TC.
- 3 Set the VTR to the recording pause mode or the stop mode and hold down the RESET button for two seconds or longer. The time code on the display window is reset to "00:00:00:00" and blinks. To cancel the reset mode, set the VTR to the mode other than recording pause mode or the stop mode.
- 4 Press the VTR button on the video camera or lens unit to start recording.

Note

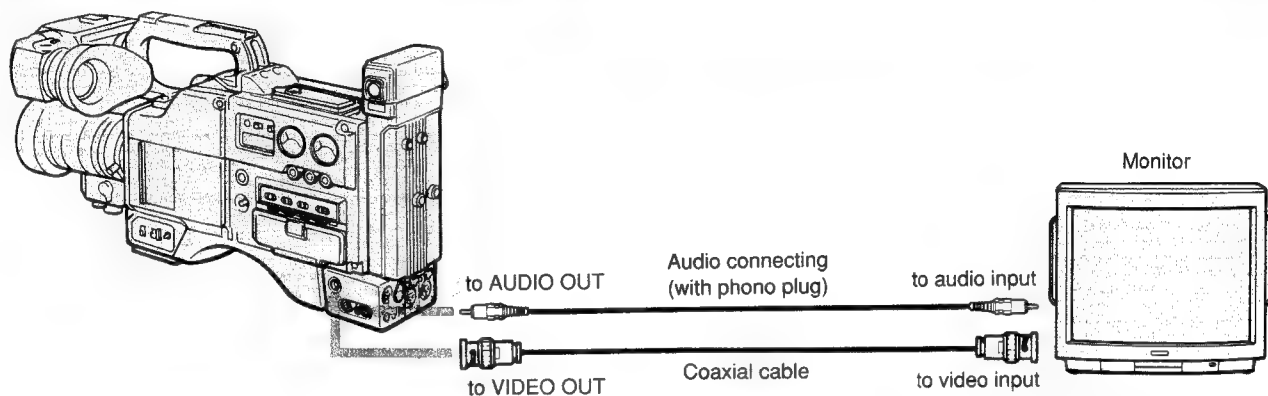
8mm time code cannot be reset during recording or playback.

Playback

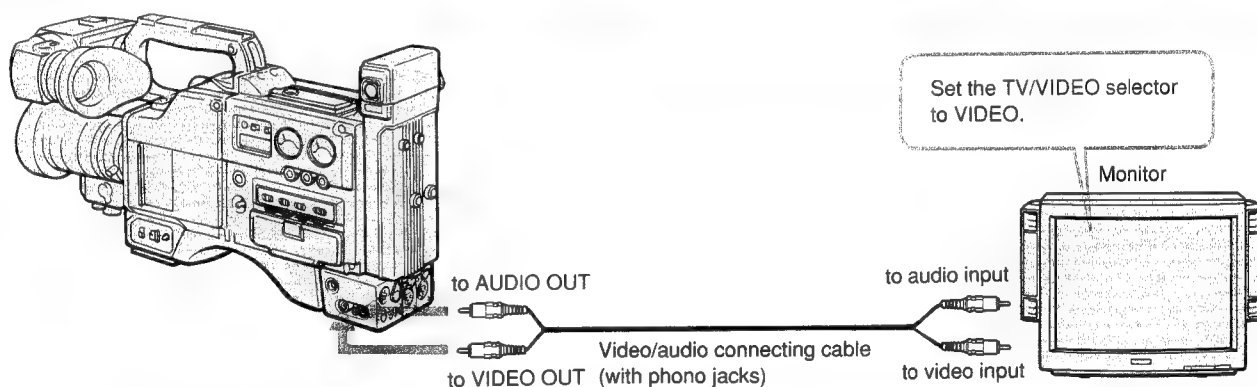
The playback picture is monitored on the viewfinder screen and on the color monitor connected to the VTR.

Connecting a Monitor

Connecting a monitor equipped with a VIDEO IN connector (BNC)

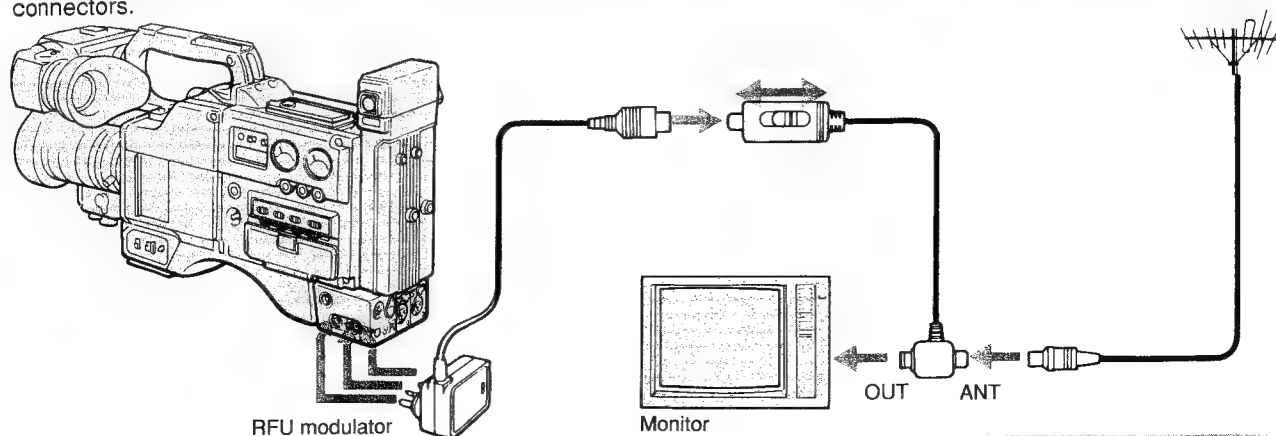


Connecting a monitor equipped with a VIDEO IN connector (phono jack)



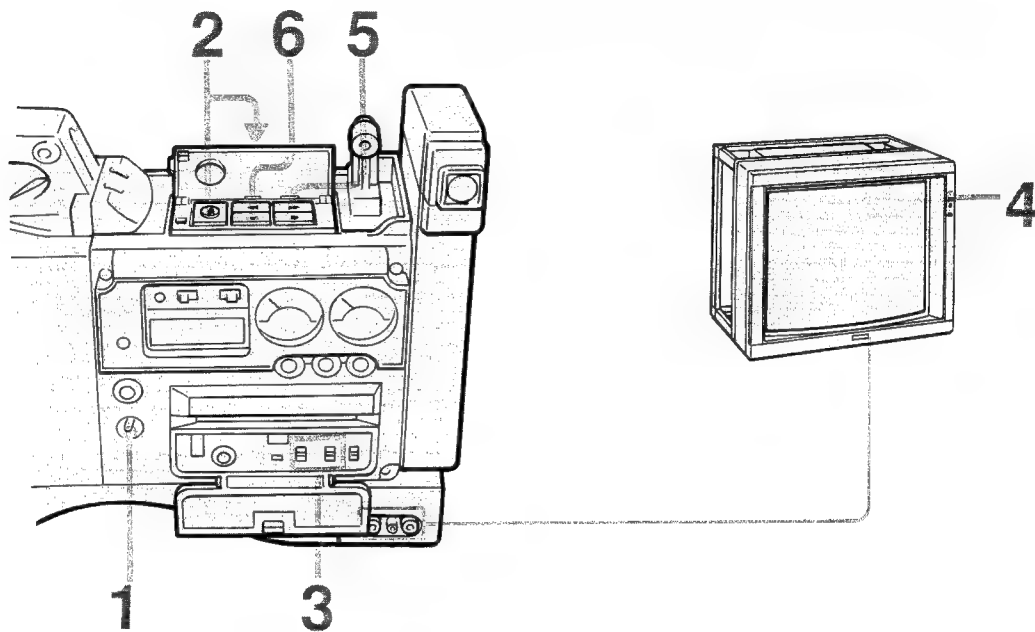
Connecting a monitor not equipped with audio/video input connectors

The RFU-89EA/ASA RFU modulator (not supplied) is required to connect a monitor not equipped with audio/video input connectors.



Playback

Operation



1 Set the POWER switch to ON.

2 Insert a recorded cassette.

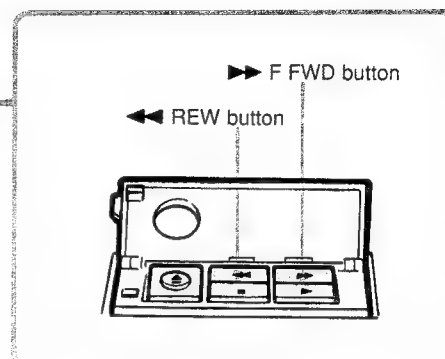
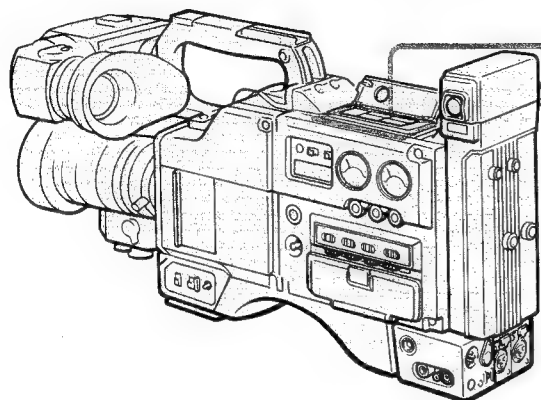
3 Select the desired audio channel to monitor.

4 Turn on the monitor.

5 Press the ► PLAY button.

6 To stop playback, press the ■ STOP button.

Use of the tape transport buttons



To advance the tape rapidly (fast-forward): Stop the tape and press the ►► F FWD button.

To rewind the tape: Stop the tape and press the ◄◄ REW button.

To view a high speed picture during playback (± 4 times normal speed):
Press the ►► F FWD or ◄◄ REW button during playback.



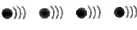



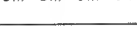

























To view a high speed picture in fast-forward or rewind mode (± 4 times normal speed):
Press the ►► F FWD button again in fast-forward mode, or press the ◄◄ REW button again in rewind mode.

Note on the effective picture size of the monitor

Some color monitors cannot display the entire picture picked up by the video camera, because they have a wide overscanning range. The area of the picture to be recorded on the VTR is that monitored on the viewfinder.

Warning System

The warning cursors and lamp, warning beep and tally lamps of camera serve to advise you of the VTR statuses indicated in the table below. In the rightmost column are described the corresponding tape transport statuses and resulting influences especially on the recording function. In general, if the tape transport stops, the VTR cannot continue the current operation. Actions you need to take in such case are also indicated in the same column.

Warning cursor	Warning lamp	Warning beep	Camera tally lamps REC/TALLY	VTR status	Tape transport status/Necessary action
RF					Head clogging Defective recording system
	(In record mode)				Clean the head.
SERVO					Irregularity in servo
	(In record mode)				Check the connections.
HUMID					Moisture condensation
					In record mode, the VTR keeps recording except when the tape sticks to the head drum. If sticking of tape does happen or if the VTR has been in other mode than record mode, it enters into stop mode. Press down the EJECT button to remove the cassette. See "Notice on moisture condensation" on page 35.
SLACK					Tape slack
					Tape transport stops. Press down the EJECT button and remove the cassette. If the cassette holder won't open, consult Sony's service personnel without turning off the power.
TAPE END					Near end
	(In record mode)				Tape transport continues operate. If the VTR has been in record mode, it keeps recording.
TAPE END					Tape end
					Tape transport stops. Replace the cassette with another.
BATT					Near end
	(In all modes)				Tape transport continues. If the VTR has been in record mode, it keeps recording.
BATT					Battery end
	(In all modes)				Tape transport stops. Replace the batteries with fully charged ones.

Meaning of the marks

Warning lamp



Blinks at 4 Hz



Blinks at 1 Hz



Lights up

Warning tone



1 second interval



1/4 second interval



Continuous tone

Warning cursor



Lighting



Blinking

When recording stops, the warning cursor, lamp and tone go out.

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Specifications

General

Weight:	Approx. 1.8 kg (4 lb)
Power requirement:	Approx. 6.0 kg (13 lb 4 oz with the DXC-325P/NP-1A/cassette tape)
Power consumption:	12 V DC
	7.5 W (in record mode)
	17.8 W (with the DXC-325P in recording mode)
Operating temperature:	-5°C to 45°C (23°F to 113°F)
Storage temperature:	-20°C to 60°C (-4°F to 140°F)
Videocassette:	Sony E5-HME, P5-MP series or equivalent
Tape speed:	Approx. 20.05 mm/sec.
Continuous operating time:	
	Approx. 60 min. (with the DXC-325P and one NP-1A)
REC or PB time:	90 min. (with E5-90HME/P5-90MP)
F FWD/REW time:	Approx. 7 min. (with E5-90HME/P5-90MP)

Video

Video recording system:	Rotary 2-head helical scan system
	Luminance: FM recording
	Chrominance: SC low-range conversion direct recording
Input:	Y: 1.0 Vp-p \pm 1.0 dB, 75 ohms, unbalanced, sync negative
	C: 0.300 Vp-p \pm 1.0 dB, 75 ohms, unbalanced
Output:	PAL composite video: 1.0 Vp-p \pm 1.0 dB, 75 ohms, unbalanced, sync negative
Horizontal resolution:	Hi8 mode: 400 TV lines
(color/monochrome)	Standard mode: 240 TV lines
S/N ratio:	Hi8 mode: 44 dB
(color)	Standard mode: 44 dB

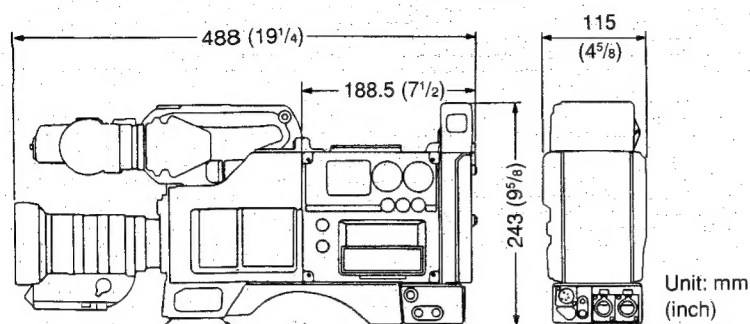
Audio

Input:	AUDIO CH-1/CH-2 (XLR 3-pin, female)
(0 dBu = 0.775 Vrms)	Mic: -60 dBu, more than 3 kilohms, balanced
	Line: +4 dBu, more than 10 kilohms, balanced
Output:	AUDIO OUT (phono jack): -10 dBu (at 47-Kilohm load), unbalanced
	EARPHONE: Level adjustable (max -18dBu) 8-ohm load
Frequency response:	AFM: 30 Hz to 15 kHz
	PCM: 20 Hz to 15 kHz
Dynamic range:	PCM: more than 80 dB

Connections

Video/Audio/Control/Power:	
(Input/output)	50-pin connector \times 1
Video	
(Output)	VIDEO OUT (BNC) \times 1
	VIDEO OUT (phono jack) \times 1
Audio:	
(Output)	AUDIO OUT (phono jack) \times 1
(Input)	AUDIO CH-1 (XLR 3-pin, female) \times 1
	AUDIO CH-2 (XLR 3-pin, female) \times 1
(Output)	EARPHONE (minijack) \times 1
	for an 8-ohm earphone
Power:	
(Input)	DC IN 12 V (XLR 4-pin)
(Output)	RFU DC OUT \times 1
	Special minijack, 5 V DC

Dimensions (at docking with the DXC-325P)



- Design and specifications are subject to change without notice.

Supplied accessories

Guide (1)
Shoulder strap (1), Metal mount (1)
Screws: M4 × 6 (2), M4 × 12 (2), cleaning cassette V8-5CLHSP (1)
Operation manual (1)

Not supplied accessories

RF modulator: RFU-89 EA/ASA
Rechargeable battery: NP-1A/1B
Camera adaptor: CMA-8CE
Battery charger: BC-1WA/1WB
8mm videocassette tape: E5-HME/P5-MP series
Cleaning cassette: V8-25CLH
Carrying case: LC-420

Troubleshooting

If any difficulty should arise during operation, check through the following list. Should the difficulty persist, contact your Sony dealer or local authorized Sony service facility.

Symptom	Cause/corrective measures
Power cannot be turned on.	<ul style="list-style-type: none"> • The battery is not installed. • The battery is exhausted.
The tape does not run when the VTR button on the video camera or on the lens is pressed.	<ul style="list-style-type: none"> • The tape is at its end. • The cassette is in record prevention mode. (See page 24.) • The tape has stuck to the head drum. Remove the cassette and reinsert it.
The tape does not run when the tape transport button on the VTR is pressed.	<ul style="list-style-type: none"> • The tape is at its end.
There is no sound in E-E mode (for details, see the E-E mode description on page 11.)	<ul style="list-style-type: none"> • The POWER switch on the video camera is set to OFF. • The safety tab on the cassette is slid out (in record prevention mode). (See page 24.)
Power has turned off during operation.	<ul style="list-style-type: none"> • The battery is weak.
The battery is quickly discharged.	<ul style="list-style-type: none"> • The ambient temperature is too low. • The battery has not been charged fully.
The cassette cannot be ejected.	<ul style="list-style-type: none"> • The battery is exhausted. • The POWER switch is turned off.
The playback picture is not clear.	<ul style="list-style-type: none"> • The video heads may be contaminated. Clean the heads using the video head cleaning cassette (not supplied). (Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.)
Audio recording cannot be made.	<ul style="list-style-type: none"> • The AUDIO LEVEL controls are set to the minimum position.
The recorded sound is distorted.	<ul style="list-style-type: none"> • The audio recording level was too high.
The recorded sound is noisy.	<ul style="list-style-type: none"> • The audio recording level was too low.

Notice on moisture condensation

If the VTR is moved directly from a cold to a warm place or used in a very humid place, moisture contained in the air may condense on the drum assembly. This may result in damage to the tape when it sticks to the head drum.

To avoid this, take the following precautions.

- When you move the VTR from a cold to a warm place directly, be sure to remove the cassette.
 - Before inserting a cassette, set the POWER switch to ON and check that the HUMID cursor does not appear.
- If it appears, do not insert a cassette. Turn off the power and wait until the HUMID cursor does not appear when the power is turned on.
 - If moisture has condensed in the VTR with a cassette inserted, proceed as follows: If the power is off, set the POWER switch to ON. Press the EJECT button to remove the cassette. Turn off the power and wait until the HUMID cursor does not appear when the power is turned on.

Video head cleaning

If the picture temporarily disappears or if snows or noise show up in the picture, the video head is contaminated and must be cleaned. Use the supplied V8-5CLHSP cleaning cassette and perform cleaning as follows.

- 1** Insert the cleaning cassette.
- 2** Press the ► PLAY button.
- 3** Let the cleaning cassette run for about 15 seconds and then press the ■ STOP button.
- 4** Press the EJECT button to remove the cleaning cassette.

- Do not run a cleaning cassette for more than 15 seconds at a time, nor use it unless the picture symptoms clearly indicate the need for head cleaning. Excessive use of the cleaning cassette will shorten the life of the heads.
- Do not rewind the cleaning cassette every time it is used. When the tape is used to its end, then rewind it.
- You can run through a cleaning cassette one time.

Video head replacement

If picture quality is still deficient after cleaning, the video heads may need to be replaced. The life of the heads is approximately 500-1000 hours of use. With this unit, the accumulated operation time of the heads can be checked with the HOURS METER.

Note

To replace the heads, please consult your Sony service facility.